

220 CMR 104.00: DESIGN, OPERATION, AND MAINTENANCE OF LIQUEFIED  
PETROLEUM PLANTS AND RELATED FACILITIES

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All liquefied petroleum gas plants in Massachusetts shall be constructed, operated and maintained except as otherwise provided in 220 CMR 104.00, according to the requirements in the latest edition of the National Fire Protection Association Pamphlet No. 59 (1968) except for changes or additions made in the various sections as follows:

A gas corporation or municipal gas department may make written request to the Department for exception from any of the provisions of this order. The Department may, after consideration, and the payment of the appropriate fee, issue the requested exception or modification to the specific gas corporation or municipal gas department requesting such exception. Upon request or in an emergency, a verbal exception may be granted by the Department. This verbal request for grant of exception must be subsequently confirmed in writing to the Department within 72 hours of the time the exception is granted.

104.01: Approval of Equipment

The authority having jurisdiction is the Department of Public Utilities.  
(NFPA 15)

#### 104.02: Electrical Equipment in Classified Areas

Fixed electrical equipment and wiring installed within classified areas specified in Table 1 shall comply with Table 1 and shall be installed in accordance with the current Massachusetts Electrical Code (527 CMR 12.00) for hazardous locations. (NFPA 18)

#### 104.03: Source of Ignition

An individual company may designate smoking areas such as the boiler room, dispatch office, etc. (NFPA 19)

#### 104.04: Location of Nonrefrigerated Containers

- (1) Serious Mutual Exposure. Where serious mutual exposure between container(s) and adjacent properties prevails, the Department may require greater distances or special protection in accordance with good fire protection engineering practices be provided. Special protection may consist of mounding or burying containers or providing fixed water spray or monitor nozzle protection. (NFPA 24)
- (2) Nonrefrigerated Containers, Above Ground. The authority having jurisdiction is the Department of Public Utilities.

#### 104.05: Installation of Nonrefrigerated Storage Containers

To minimize the possibilities for trespassing and tampering, the area which includes container appurtenances, pumping equipment and loading and unloading facilities shall be protected by one of the following methods:

- (1) Enclosure with at least a six foot high industrial type fence unless otherwise adequately protected. There shall be at least two means of emergency access through the fenced or other enclosure.
- (2) As an alternative to fencing the operating area, suitable devices which can be locked in place shall be provided. Such devices, when in place, shall effectively prevent unauthorized operation of any of the containers, appurtenances, system valves or equipment.
- (3) Locks with frangible shanks shall be used. (NFPA 25)

#### 104.06: Location of Refrigerated Containers

The authority having jurisdiction is the Department of Public Utilities.

#### 104.07: Loading and Unloading Facility Spacing

- (1) Loading and unloading connections shall be at least 75 feet away from uncontrolled sources of ignition, process areas, control buildings, offices, shops and other occupied or important plant structures. This does not apply to structures or equipment directly associated with the transfer operations. (NFPA 38)
- (2) The filling pipe inlet terminal shall not be located inside a building. Such terminals shall be located not less than ten feet from any building, and not less than five feet from any driveway, and shall be properly supported and protected from the possibility of physical damage. (NFPA 38)
- (3) A tank vehicle loading and unloading area shall be of sufficient size to accommodate the vehicles without excessive movement or turning. (NFPA 38)
- (4) Transfer piping, pumps and compressors shall be located so that they are safe from damage by rail or vehicle movement and liquid transfer operations. The design of any pier support, abutment or device used for this purpose shall be approved by the D.P.U. (NFPA 38)

#### 104.08: Piping Materials

- (1) Piping shall be suitable for its intended use at the temperature of the application and shall be designed for not less than the maximum pressure and for the minimum temperature to which it may be subjected. The temperature change occurring during the conversion from the gaseous to the liquid phase permits the use of several materials, each having its own specific utilization temperature range. The design and fabrication of piping systems shall be in accordance with ANSI B31.3, Petroleum Refinery Piping, 1973, except as modified by the provisions of 220 CMR 104.08 and any applicable Federal pipeline regulations. (NFPA 41)
- (2) Propane plant piping systems shall be designed to comply with DOT (Office of Pipeline Safety) Standard, Parts 192 and 195, whichever is applicable. (NFPA 41)

#### 104.09: Piping Materials

- (1) All liquefied petroleum gas plants and related facilities to be constructed, or where major reconstruction is involved, shall be designed to enable isolation of piping sections or systems for periodic retesting. (NFPA 41)
- (2) All gas valves shall be inspected for proper operation at least once each year by the operator, and records maintained by the operator. (NFPA 41)

- (3) Connections and fittings shall be inspected monthly by the operator with a combustible gas indicator for possible leakage. Visual inspection shall be made to assure that all rain caps are in a closed position and that there are no hazardous or unusual conditions at the plant. A record of the date of inspection must be made and retained by the operator. If automatic sensing devices are installed, monthly combustible gas indication tests are not required. (NFPA 41)

#### 104.10: Container Valves and Accessories

All storage tanks shall undergo inspection and test of excess flow valves, liquid level devices and gauge connections at ten year intervals by the operator. (NFPA 42)

#### 104.11: Filler and Discharge Pipes, Manifolds

- (1) The filling pipe inlet terminal shall not be located inside a building. Such terminals shall be located not less than ten feet from any building, and not less than five feet from any driveway, and shall be properly supported and protected from the possibility of physical damage. (NFPA 43)
- (2) The liquid manifold connections shall be located at non-adjacent ends of parallel rows of containers. (NFPA 43)
- (3) In the design of the liquid piping system, shut off or block valves shall be installed to limit the volume of liquid that could be discharged in the vicinity of containers or important structures in the event of a liquid line failure. Automatically or remotely controlled valves, or both, of the fail-safe type, shall be used. The mechanism for such valves shall be provided with a secondary control equipped with a fusible release (not over 220°F melting point) which will cause the valve to close automatically in the case of fire. Such valves shall also be capable of being manually operated at the installed location. Such valves within 300 feet of a container or important structure shall be arranged to limit the quantity that could be discharged to a maximum of 300 cubic feet of liquid. In no case shall there be more than 150 feet between valves on the same line within 300 feet of a container or important structure. (NFPA 43)

#### 104.12: Hose Specifications for Nonrefrigerated LP Gas

Hoses used for loading or unloading may be either conductive or nonconductive electrically. Each hose shall be tested by the operator at two year intervals to twice the design pressure of the vessel or piping to which it may be attached. Conductive hoses shall be tested electrically at the same time. Any deterioration in conductivity shall result in discarding the hose under test. Under no circumstances shall either type of hose be connected to any vessel or piping until a grounding conductor has been connected across gap to be filled by the hose. All hoses shall be identified by number and test dates recorded and retained by the operator. (NFPA 45).

#### 104.13: Vaporizers Not Directly Heated with Open Flame

Vaporizers shall not be installed in the same room with units furnishing air other than for a liquefied petroleum gas mixing device. Vaporizers must not be installed in buildings, rooms or structures in which open flames or fire may exist. Such structures shall be of light fire resistive construction or equivalent, well ventilated near the floor line and at the highest point in the roof. (NFPA 52).

#### 104.14: Direct Fired Vaporizers

Direct fired vaporizers may be installed in buildings, rooms or structures used exclusively for vaporizing LP gas. (NFPA 53).

#### 104.15: Testing Relief Devices

- (1) Relief valves installed on tanks shall be removed and tested for design capability at five year intervals. If a relief valve does not meet design criteria on test as outlined in section 6 of NFPA pamphlet No. 59, it shall be promptly discarded. (NFPA 62).
- (2) Relief devices installed between each pair of blocking valves shall be tested or replaced at five year intervals. A record shall be kept by the operator of test or replacement date. (NFPA 62).

#### 104.16: Transfer of Liquids Within a Utility Plant

- (1) A person qualified by the operator shall be in constant attendance and maintain continued surveillance of connections at tank vehicles or tank cars during loading and unloading operations. (NFPA 72).
- (2) The back pressure check valve shall be installed as near as possible to the hose connections. (NFPA 72).

#### 104.17: Fire Protection and Safety -- General

Equipment and procedures incident to the use of said equipment shall be designed to minimize the consequences of accidentally released LPG, flammable refrigerants or flammable gases in facilities constructed and arranged in accordance with the Code. (NFPA 81).

#### 104.18: Fire Protection and Safety -- General

- (1) Detailed plans shall be made to cover emergency procedures, emphasizing shutdown, cutting off gas supply and liquid flow into the plant, isolation of various portions of the equipment, depressurizing and other applicable steps to

insure that the escape of gas or liquid is promptly cut off or reduced. These plans shall be available for review and approval by the Department prior to operation of the plant. (NFPA 81).

- (2) Emergency controls shall be conspicuously marked with signs designating their function. (NFPA 81).
- (3) Each gas company shall initiate a training program with the local fire department. The training program shall include training on controls and piping systems, fire fighting equipment and various exercises simulating fires and explosions. A report shall be submitted quarterly to the Department outlining the training program. This report shall also include the number of company personnel and fire department employees. The program may be augmented by any requirements of the local fire department. (NFPA 81).

#### 104.19: Personnel Safety

Personnel shall be advised by conspicuous posting at strategic locations of the serious danger from frostbite which can result upon contact with LPG or cold refrigerants. Suitable protective clothing and equipment shall be available. (NFPA 90).

#### REGULATORY AUTHORITY

220 CMR 104.00: M.G.L. c. 164, §§ 66, 76, and 105A.